Comment No.	Section	Page	Line	Comment	Response to Comment-Proposed Revision
EPA-1				Explain how a grid of 15 to 30 m is appropriate to catch differences seen at transition areas (e.g., shorelines).	The level of grid resolution (i.e., size and number of grid cells) chosen for any modeling study requires a balance between adequately simulating hydrodynamic, sediment transport and chemical fate and transport processes and the ability to conduct multi-year simulations (e.g., 20-year simulations) within a practical length of time. The proposed level of grid resolution (i.e., 15 to 30 m) is based on a combination of preliminary model testing using this grid resolution and previous experience in conducting similar modeling studies at over 40 sites. Based on preliminary model testing and professional judgment, the proposed level of grid resolution is adequate to meet the objectives of the modeling study. The resolution may be revised, however, if the results indicate that the model is not capturing large gradients that may occur in transitional areas.
EPA-2	4.1, 4.2, 4.3, 5.3.1			List and describe types of high flow, storm event, flood event, and hurricane event data needed and where it will be obtained.	The hydrodynamic model requires two types of boundary condition data to simulate high-flow (flood) events and hurricanes: 1) freshwater inflow from San Jacinto River (upstream boundary of model); and 2) water surface elevation (downstream boundary of model). The freshwater inflow during floods will be specified using flow rate data obtained from the Coastal Water Authority discharge station at Lake Houston dam and USGS gauging stations on the San Jacinto River. Water surface elevation during a hurricane will be specified using data obtained at the NOAA tidal gauging station at Battleship Texas State Park.
EPA-3				The chemical fate and transport model (QEAFATE) description alludes to covering colloidal interactions but did not discuss bioturbation in detail, this exchange mechanism is very important (see Lampert and Reible, 2009 capping model). The K-saponite represents a type of clay mineral surface that one would expect to find in these sediments. The moderate affinity of PCDDs and PCDFs for these types of clay minerals may represent a problem associated with colloid assisted transport of suspended clay particles carrying PCDDs and PCDFs offsite.	The chemical fate and transport model does simulate the effects of bioturbation, as discussed on p. 9 and 10 of the modeling study addendum. QEAFATE uses a bed model that has multiple layers, with the number of layers and thickness of the layers specified as a model input. Particle mixing within the bed due to bioturbation is simulated in the bed model by specifying the rate of mixing between the layers and the depth of mixing. Both the mixing rates and depth are specified as model inputs. The depth of mixing will be determined through analysis of vertical profiles of chemical concentrations and radioisotope activity form sediment cores collected within the Study Area. The rate of mixing between the layers will be adjusted during model calibration. The model does not specify clay mineral types, such as K-saponite, however, it does include consideration of clay sized particles and their interaction with the water column. The model simulates temporal and spatial changes in the composition of sediment in the water column and sediment bed. In addition, the model has the capability to track the fate and transport of sediment from specific locations or sources. For any particle-associated chemical, the total chemical concentration in the water column or sediment bed is the sum of the dissolved and particulate concentrations. The relative proportions of dissolved and particulate concentrations is determined by the partition coefficient for a specific chemical, with the relative amount of the particulate component increasing as the value of the partition coefficient increases.
EPA-4				Is the Sedflume data being used to verify the SEDZLJ sediment transport model, or if not, what if the data conflicts with the model?	Sedflume core data provide information on the erosion properties of cohesive (muddy) bed sediments. These data are used to develop erosion parameters that are input to the sediment transport model. Thus, the Sedflume core data are not used to calibrate and validate the sediment transport, or evaluate the predictive capabilities of the model.
EPA-5				The approach suggests that these models can also be used to evaluate remediation alternatives, but no further description of the types of remediation were provided that would suggest the limits of such approach (i.e., removal vs. containment vs. treatment).	The modeling framework (i.e., linked hydrodynamic, sediment transport, and chemical fate and transport models) will be used as one line-of-evidence in a weight-of-evidence approach to evaluate and compare a range of remediation alternatives during the Feasibility Study (FS). The general types of remediation alternatives to be evaluated during the FS may include, but are not limited to: 1) monitored natural recovery; 2) capping (containment); 3) in situ treatment; and 4) removal. The potential limitations of the predictive capability and reliability of the modeling framework with respect to evaluating remedial alternatives cannot be determined at the present time. Any limitations of the modeling framework for its usefulness during the FS will be determined during the model study.
EPA-6				The hydrodynamic model description (EFDC) provided on page 7 does not list ground water recharge or discharge.	Interactions between groundwater and surface water will not be explicitly incorporated into the hydrodynamic model. The San Jacinto River within the Study Area is a tidal system, which makes it extremely difficult to accurately estimate the relatively small amount of groundwater recharge or discharge that interacts with the surface water. With respect to the hydrodynamics

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					of the river, groundwater flow will have a negligible effect on circulation in the Study Area because of the negligible amount of groundwater flow (compared to the river discharge and tidal flow).
EPA-7				Hydrodynamic Model: Calibration for the hydrodynamic modeling includes measurements of current velocities for at least one (1) high-flow event (Section 5.3.1). A high-flow event is defined as an event with a flowrate of at least 10,000 cfs (Section 3.5.1). Per the subject report (Section 3.5.1), such an event is less than one-third the flowrate of a two-year return event. The TCEQ notes that model calibration based on flowrates from such a frequent return period may not allow significant extrapolation by the model to less frequent return periods.	A similar approach has been successfully used during modeling studies at other contaminated sediment sites. See the response to comment EPA-42 for additional discussion of this issue.
EPA-8	5.4.1			Sediment Transport Model: Section 5.4.1 states that a total of 68 surface samples will be taken for the Bed Property Study. However, Figure 4 shows the locations of the surface samples, in which there are more than 68 locations. From these data, it is unclear how many surface samples will be collected and where their locations may be.	Figure 4 showsthe bed probing locations and not the surface sampling locations. The title of the figure will be modified accordingly. The 68 surface samples discussed in Section 5.4.1 were collected in May 2010 as part of the sediment Sampling and Analysis Plan (SAP) and those samples are not part of the bed property study to support the sediment transport modeling. For the modeling study, 30 additional samples will be collected, as described in Section 5.4.1.2. The 68 samples collected for the SAP are located within the primary Study Area (i.e., within the vicinity of the waste impoundment area). The 30 samples collected during this study are located upstream and downstream of the primary Study Area and collocated with the bed probing sites that are depicted in Figure 4.
EPA-9	5.4.1			Sediment Transport Model: Section 5.4.1 states that the impoundment surface sediment also will be sampled. However, Figure 4 shows no sediment sampling at the location of the impoundment. The TCEQ considers the determination of the erodibility of impoundment sediments to be essential to any sediment transport modeling effort.	The sampling described in Section 5.4.1 will provide data on bulk bed properties (i.e., grain size distribution, dry density). The erosion properties of cohesive sediments will be measured during the Sedflume study (see Section 5.4.2). Sediment cores will be collected from 15 locations, with the cores collected from three distinct areas: 1) in the immediate vicinity, but outside of the perimeter of the waste impoundments; 2) upstream of the waste impoundments; and 3) downstream of the waste impoundments. The impoundments will be covered to prevent erosion and stabilize the site for all options being considered in the Time Critical Removal Action (TCRA) planned to occur in 2010. Any sampling done within the impoundments prior to the TCRA for post-construction RI/FS evaluations will be irrelevant.
EPA-10	5.4.3			Sediment Transport Model: Section 5.4.3 states that the net sedimentation rates will be determined by age dating using radioisotopes. The TCEQ is concerned that samples obtained San Jacinto River Waste Pits from areas in a channel that is being actively dredged (for shipping) are not suitable for net sedimentation rate studies. Therefore, it is necessary to understand where dredging occurs in the Study Area. Additionally, it is also important to understand where dredging spoils may be deposited in the study area.	The radioisotope cores will not be collected from areas that are being actively dredged or that have been affected by dredging or are located downstream of dredging disposal locations. A thorough review of available information and data related to past and present dredging and disposal activities in the Study Area will be conducted to guide selection of the radioisotope core locations.
EPA-11				Sediment Transport Model: The possible effects of dredging in the San Jacinto River upstream of the Study Area may also affect the calibration of the sediment transport model in the most dynamic section of the channel(s). The TCEQ requests some discussion regarding how the proposed modeling will account for the additional physical complexity introduced by the effects of possible nearby dredging.	The effects of past dredging on the sediment transport model are primarily due to changes in bathymetry and geometry of the river channel and adjacent areas. Changes in bathymetry and geometry due to dredging will be incorporated into the model through the data provided by the bathymetric survey discussed in Section 5.3.2. Use of recently collected bathymetric data in the model will adequately account for the effects of dredging in the model.
EPA-12				Sediment Transport Model: Storm surge from recent major storms (e.g., Hurricanes Ike, Rita, and flood of October 1995) may also have complicated sedimentation history of this estuarine system. Such effects will further confound the model calibration process.	The inclusion of major storm events in the calibration period for the sediment transport model provides a strong test of the predictive capabilities of the model. If the model is able to be adequately calibrated during a period when major storms occurred, then the confidence in the reliability of the model will significantly increase.
EPA-13				Chemical Fate and Transport Modeling: Calibration of chemical partitioning in sediment, whether equilibrium or disequilibrium, also can be confounded by the processes described with the Sediment Transport Model. Careful selection of appropriate calibration sample locations is essential and should be justified in the context of both the Hydrodynamic Model and the Sediment Transport Model.	. As commented in the response to comment EPA-10 the calibration sample locations (radioisotope cores) will be selected ensuring that they are undisturbed based on current knowledge of dredging and disposal activities in the past.
EPA-14	2.2			Statement of the Problem - The discussion indicates that the analysis of chemical fate and transport processes in the Study Area is needed to perform the evaluation of remedial alternatives during the Feasibility Study (FS). This seems rather limited. This information could	The utility of the modeling study is not limited to evaluating remedial alternatives during the FS. As stated in Section 2.3: “The primary objectives of the chemical fate and transport analysis are: 1) develop conceptual site models (CSMs) for sediment transport and chemical fate and

				be used for other purposes (i.e., to corroborate empirical measurements of site contaminants of potential concern (COPCs) throughout the system, to support the human and ecological risk assessments, and to provide a sensitivity analysis of expected COPC movement in future significant weather events).	transport; 2) develop and apply quantitative methods (i.e., computer models) that can be used as a management tool to evaluate the effectiveness of various remedial alternatives; and 3) answer specific questions about sediment transport and chemical fate and transport processes within the Study Area." A list of specific questions to be answered by the model is provided on p. 5 and 6. These questions incorporate the issues mentioned in the comment. Further, it is important to note that, consistent with the objectives of the RI/FS, the main use for the model will be to establish a baseline flow, sediment transport, and fate and transport conditions that will be used to predict future conditions and inform management decisions regarding risk and feasibility of remediation alternatives. The study will not be focused on understanding past releases; however, the model can be used to inform and test hypotheses on processes affecting those releases.
EPA-15	2.3			Primary Objectives of Modeling Study - Among other questions, the discussion on page 6 (last bullet) states that the chemical fate and transport model will be used to assess the effects of chemical concentrations in the surface-layer of the sediment bed have on total (i.e., dissolved and particle-associated) chemical concentrations in the water column. This question should be expanded to include the surface of the waste material as well as the sediment bed. Both could release dissolved and particle-associated COPCs and the expected behavior could be different.	As presented in Figure 2 of the tech memo, QEAFATE Is capable of handling dissolved and particulate material. In particular, the model can handle the movement of pore water from the bed to the water column and its associated transport of dissolved COPCs. Figure 2 will be edited to reflect this model capability.
EPA-16	2.4			Contaminants of Potential Concern - Table 1 does not list PCBs as COPCs. Total PCBs are listed as secondary COPCs in the sediment SAP for human health (Table 9) and fish and wildlife (Table 11).	Table 1 will be revised to include PCBs as secondary COPC.
EPA-17	4.3			Data Gaps and DQOs: Chemical Fate and Transport Model - The discussion on page 18 states that information regarding the "rate of temporal change of dioxin congener concentrations in the surface-layer of the sediment bed," is a data gap. The Respondents should consider that the same information does not exist for the change in concentrations in the surface-layer of the waste material.	As part of the Time Critical Removal Action (TCRA) the exposed waste in the water will be covered with some type of stable cap in all remedial scenarios being evaluated.. After the stabilization iss completed, it is safe to assume that the waste will not be not exposed,, making the potential fate and transport of waste impoundment derived material significantly different than the current existing condition.
EPA-18	5.4.1			Bed Property Study - The introductory text mentions that as part of the SAP, a total of 68 surface sediment samples (0 – 10 cm) will be collected for characterization of Site and impoundment surface sediment (see Table 13 from the SAP) and that these samples will be analyzed for bulk bed properties (i.e., GSD, dry density) and these data will be used to develop inputs for the sediment transport model. Looking at Figure 4, there are no probing locations indicated within the preliminary site perimeter. So as far as the question of bed cohesiveness, it is not clear where bulk sediment analyses are proposed and why. Please clarify.	See responses to comments EPA-8 and EPA-9.
EPA-19	5.4.4			Upstream Sediment Load Study - Figure 5 depicts the location of the upstream sediment load sampler. What is the basis for proposing this sample location and why is the proposal limited to one sampler?	A significant concern during the design of the upstream sediment load study was the security and protection from vandalism of the automated sampler. After a review of potential locations for the automated sampler, it was determined that the location shown on Figure 5 was the only location in the Study Area with adequate security and protection from vandalism.
EPA-20	5.4.4			Upstream Sediment Load Study - The discussion indicates that the sampler will be serviced once every three days and decisions regarding analysis of total suspended sediment (TSS) concentration will be dictated by the occurrence of rainfall events during the 3-day period. What is the basis for the 3-day window? Is this simply a reflection of the holding capacity of the sampler (with 8 composites per day)?	The holding capacity of the automated sampler is 24 bottles, which is the reason for servicing the sampler every 3 days.
EPA-21	Appendix A	Page 7		Quality Assurance Project Plan for Sedflume Testing - There is a statement on page 7 as follows: "when non-cohesive sands are obtained at a given site, the core will be reconstructed in Sedflume cores." The Respondents should explain this statement, including the reliability of the "reconstructed" core to represent ambient conditions.	As stated in Section 5.4.2, only cohesive sediment cores will be collected for this study. Thus, the statement from the QAPP regarding non-cohesive cores is not applicable to this study. The text will be revised and the discussion related to non-cohesive cores, and reconstructed cores, will be deleted.
EPA-22	Figure 1			"Houston Shipping Channel" is not the name used in text. And is not recognized by the group.	Figure 1 will be modified so that the label reads "Houston Ship Channel".
EPA-23	Figure 2			Box for hydrodynamic model does not depict/include the "salt equations" or density-driven processes mentioned on page 8 of text.	Figure 2 will be modified to include density-driven currents.

EPA-24	References List			Citations on page 32 include "University of Houston and Parsons, 2008. Total maximum daily loads for dioxins in the Houston Ship Channel. Contract No. 582-6-70860, Work Order No. 582-6-70860-02. Quarterly report No. 3. Modeling Report – Revision 2. Prepared in cooperation with the Texas Commission on Environmental Quality and the U.S. Environmental Protection Agency. University of Houston and Parsons Water & Infrastructure." The correct date is 2006, need to edit the reference list citation.	The November 2008 document is Work Order No. 582-6-70860-18, and the citation will be corrected.
EPA-25	Section 2.2			"…analyze the fate and transport of particle-associated chemicals within the Site and Study Area…". Study should not be limited to particle-associated chemicals. There needs to be some attention paid to dissolved transport, especially with regard to containment/remediation and the possible need for geosorbents. Granted, some apparently dissolved transport is likely to be on colloidal particles that pass through filters, but the issue remains that dissolved or colloidal transport might escape from containment adequate for sediment.	The term "particle-associated chemical" does not mean that the chemical is totally adsorbed to sediment particles. For any particle-associated chemical, the total chemical concentration in the water column or sediment bed is the sum of the dissolved and particulate concentrations. The relative proportions of dissolved and particulate concentrations is determined by the partition coefficient for a specific chemical, with the relative amount of the particulate component increasing as the value of the partition coefficient increases. The chemical fate and transport model will be used to predict the transport of both dissolved and particulate concentrations. This is indicated by the questions to be addressed by the study, in the final bullet on page 6.
EPA-26	Section 3.1			"…sediment bed composition (i.e., relative amounts of clay, silt, and sand from different sources);…". Will sediment model track size classes separately, following each particle from point of origin, as this sentence seems to imply? Or does model track median particle size and statistically estimate size class distribution (which would not link back to "different sources")? How are "different sources" of particles tracked by model?	The sediment transport model will simulate the erosion, deposition and transport of four size classes: 1) clay/silt (< 62 μm); 2) fine sand (62-250 μm); 3) medium/coarse sand (250-2,000 μm); and 4) gravel (>2,000 μm). The model simulates temporal and spatial changes in the composition of sediment in the water column and sediment bed. In addition, the model has the capability to track the fate and transport of sediment from specific locations or sources. The technical memo will be edited to incorporate more details on the sediment class definition.
EPA-27	Section 3.1			Will particulate organic carbon (POC), total organic carbon (TOC), and/or dissolved organic carbon (DOC) be in the sediment and chemical models? Mention of partitioning implies yes, but not clearly stated. Whether or not explicitly mentioned in this plan, future review of work should assure that these organic parameters are included.	The model will not explicitly simulate transport and fate of organic carbon (i.e., POC, DOC). The effects of organic carbon on partitioning are incorporated into the model through the use of user-specified POC content in the water column and sediment bed.
EPA-28	Section 3.1			"The sediment transport model predicts the transport and fate of inorganic sediment; the transport and fate of organic solids is not simulated by the model.". Then the "dissolved" fraction in the chemical fate model must simulate/include any organic solid transport of COPCs, whether dissolved, colloidal, or particulate	The chemical fate and transport model simulates the transport of total chemical concentration; the transport of dissolved and particulate chemical concentrations are not explicitly simulated by the model. The model predicts temporal and spatial changes in total chemical concentration in the water column and sediment bed. Given the predicted value of total chemical concentration at a particular location, the dissolved and particulate concentrations are calculated using standard partitioning equations.
EPA-29	Section 3.2.1			Hydrodynamic modeling: It is not clear where the lower boundaries of the hydrodynamic model are proposed to be. Figures imply somewhere in vicinity of Lynchburg Ferry, and Table 2 refers to the tide gauge at Battleship Texas. Section 4 implies the Battleship gauge will provide "water surface elevation and salinity at the downstream boundary." There needs to be two boundaries at that area, one for the interface with the Buffalo Bayou branch (i.e. the main ship channel, segments 1006, 1007), and one for the interface with the lower San Jacinto River/HSC reach from Lynchburg to Galveston Bay (segment 1005, plus other "side bays"). Sea tides come up from Galveston Bay, and from the Lynchburg intersection can propagate both up the San Jacinto River and up the main channel (Buffalo Bayou branch). The Buffalo Bayou branch is really more like a "side stream boundary", it is not "downstream" from tidal perspective. Downstream river flow from the San Jacinto River ("north") can go both down channel toward Galveston Bay ("south") and up Buffalo Bayou ("west"), depending on how tide and flow interact at the 3-point Lynchburg intersection. Sediment also may be transported west, south, or north from there. The model should not combine west and south boundaries, or it could be misleading with regard to where water and transported load goes to or comes from. The water body or area called Old River is another complex detail. It provides a circular loop back to the San Jacinto channel adjacent to the 3-way intersection. Old River is clearly meant to be within the model domain (Figures 3 and 4), as it should be, but it cannot represent the main channel reach along Buffalo Bayou.	It is envisioned that the downstream boundaries of the hydrodynamic model will be located at the southern extents of the main (eastern) channel of the San Jacinto River and the Old River channel. Preliminary model testing has demonstrated that specifying the downstream tidal boundary at these two locations produces realistic tidal circulation within the Study Area. However, it will be analyzed the possibility to modify the downstream boundaries, so the model can provide separately the flow going to the west and to the south in the Houston Ship Channel.
EPA-30	Section 4.1 Table 2			Because of lower boundary issues mentioned above, the hydrodynamic model could consider using the Morgan's Point tide gauge to represent the "south" boundary. Or, could develop some way to represent both lower boundaries based on the Battleship gauge. The Battleship tide gauge is near the "west" boundary in Buffalo Bayou.	If the water surface elevation data from the NOAA gauging station at Battleship Texas State Park does not produce adequate calibration results, then other tidal data sources will be considered and evaluated.

EPA-31	Section 4.2			"High-flow events are the focus of a sediment load study because, typically, a majority of the annual load occurs during a small number of high-flow events.". This study should focus on the redistribution of "old" sediment already in the system, at least as much as on the annual load of "new" sediment entering the system. Other comments below address that the proposed "high-flow event" of 10,000 cfs for sampling purposes is not very high for the site. A 10,000 cfs flow in the SJR may not be a major annual loading event. Not clear if the statement on page 16 is about model simulation of larger events (>>10,000 cfs).	The statement referred to in this comment addresses the issue of external sediment loading from the San Jacinto River to the Study Area. The "sediment load study" means the field study to collect data that can be used to estimate the annual load of sediment from the river to the Study Area; it is not referring to the sediment transport modeling study, which will evaluate the transport and fate of sediment within the Study Area.
EPA-32	Section 4.2			"bed elevation change" is mentioned as information needed. Not clear if that is to include changes due to subsidence, past or present or future, as well as due to sediment dynamics. This draft does not say how long the model simulation periods will be (a few months? A few years? A few decades?), for either calibration or predictive simulations of future conditions.	In the context of this type of modeling, "bed elevation change" refers to changes due to sediment dynamics, and does not include changes due to subsidence, which has essentially ceased in the study area based on Harris County Subsidence District data and observations. The calibration period will be determined after the field studies are completed and the sediment transport data area analyzed. The length of predictive simulations for the FS will be determined after the model calibration is completed. However, it is likely that multi-decadal simulations (e.g., 20 years) will be used for the FS evaluations. The technical memo will be edited to include a clarification regarding the proposed long-term predictive simulation runs.
EPA-33	Appendix A			"It can be seen in this plot that the surficial sediments erode easily at lower sediments, but at lower levels in the core the sediments are much more difficult to erode requiring much larger shear stresses.". First part of sentence does not make sense. Perhaps the highlighted word "sediments" was not the intended word…may have meant to say "shear stresses" or similar?	The sentence in Appendix A will be revised to state: "It can be seen in this plot that the surficial sediments erode easily at lower shear stresses, …"
EPA-34	Appendix A			"…and average bulk properties will be plotted with binned depth.". Perhaps this refers to statistical "bins" for categorizing data, but it is not clear.	The erosion rate tests are conducted using cycles of shear stress (i.e., increasing from low to high applied shear stress) over a specified depth interval in the core, which is typically about 5 cm in thickness. The "binned depth" refers to a depth interval for a particular shear stress cycle. The text in Appendix A will be revised as needed to clarify this issue.
EPA-35	Appendix A			Appendix A: "Quality assurance objectives and results will be assuaged in the process of preparing the report.". Is 'assuaged' the intended word?	This sentence in Appendix A will be revised to state: "Quality assurance objectives and results will be assessed …."
EPA-36	Appendix A			"…6 cores represents approximately on week in the field." Replace 'on' with 'one'.	The text in Appendix A will be revised as requested.
EPA-37	Appendix A			"Coring locations will be chosen with the following tenants in mind:…". Replace 'tenants' with 'tenets'.	The text in Appendix A will be revised as requested.
EPA-38	Appendix A			"…knowledge of sediment variability both aerially and with water depth…". Replace 'aerially' with 'spatially'.	The text in Appendix A will be revised as requested.
EPA-39	Section 4.3			"…(Univ. of Houston and Parsons 2008)." That needs to be 2006 instead of 2008.	See response to comment EPA-24.
EPA-40	Section 4.3			Interpretation of radioisotope data from sediment cores to establish the age of sediment or rates of change seems to be a very subjective process. There will be a lot of uncertainty associated with net sedimentation rates and temporal change in dioxin/furan concentrations derived from such analyses, especially in relatively shallow and dynamic situations like the San Jacinto delta.	The analysis of the radioisotope core data will use well established procedures, which are objective, that have been applied to numerous cores at a large number of contaminated sediment sites. These procedures will also provide quantitative estimates of uncertainty in the net sedimentation rates derived from the age-dating analysis of the cores.
EPA-41	Section 5.3.1			"The mean flow rate in the San Jacinto River is 2,200 cfs, and high-flow events with return periods of 2, 10, and 100 years correspond to flow rates of 31,600, 107,000 and 329,000 cfs, respectively.". Cite the source of, or provide the basis for, these flow statistics.	A Log Pearson Type 3 flood frequency analysis of historical flow rate data collected at USGS gauging stations on the San Jacinto River were used to determine these flow statistics. The period of record for the flow rate data was 1985-2009.
EPA-42	Section 5.3.1			Plan proposes 10,000 cfs as defining a high-flow event for hydrodynamic monitoring purposes. Since the study plan anticipates two high-flow events during a month or so, and since the cited 2-yr event (31,600 cfs) is significantly larger than 10,000 cfs, the proposed high-flow events might be considered "slightly-higher-than-normal-flow events" in the scheme of river dynamics. Modeling should be able to simulate truly large high-flow events.	Collecting hydrodynamic and sediment transport data during high-flow events at a contaminated sediment site is always uncertain because of the relatively low probability of a high-flow event occurring during a specific time period. Constraints on the RI/FS schedule means that the modeling study needs to be completed within a specific time period. Thus, a limited period of time is available to collect field data and, typically, a rare high-flow event (e.g., 10-year flood) will not occur during this time period. Thus, data collected during elevated high-flow events (i.e., greater than 10,000 cfs for this study) are used as best as possible for model calibration and validation. This approach has been used successfully at other contaminated

					sediment sites where the calibrated model was used for 100-yr flood event providing reliable results.
EPA-43	Section 5.3.1			"In the region upstream of the primary Study Area, a total of 15 cross-channel transects will be surveyed. In the region downstream of the primary Study Area, a total of 12 cross-channel transects will be surveyed as shown in Figure 3.". Transects marked on Figure 3 cross only the deep channel in upstream reach – how will bathymetry of the wide shallow areas be determined? Water and sediment move there also. There should be a lot of 3-ft by 3-ft grids in the model to cover the shallow water area.	Bathymetry data from NOAA nautical charts are available in the wide shallow areas. These data are adequate for specifying model inputs in those areas.
EPA-44	Section 5.3.1			Transects downstream from Site: much of Old River is often covered by parked barges, getting the transect data may be more difficult than expected.	The field study crew will endeavor to overcome potential obstacles and collect as much data as possible. Changes to proposed sample locations that may be required as a result of obstacles encountered during sampling will be discussed with EPA during the field sampling event.
EPA-45	Section 5.3.1			Model lower boundary, vicinity of Lynchburg Ferry/De Zavalla Point: since the model needs two lower boundaries to separately characterize the "south" and "west" branches of channel (see Comment #29) some bathymetry to characterize those boundaries is needed.	Bathymetry transects are located in the immediate vicinity of the two downstream boundaries, see Figure 3.
EPA-46	Section 5.4.1.1			Sediment probing in Old River may be obstructed by parked barges. May need to define a procedure to use in case the "pre-programmed target coordinates" are under a group of barges. Also, not clear how the 6-inch interval markings on probe are read. Bottom will not be visible at most sites, so unlikely to read marks at sediment surface; water surface could index to markings, but not clear if depth to bottom will be consistent around a sample location.	The field study crew will endeavor to overcome potential obstacles and collect as much data as possible. The water surface will be used to index the markings.
EPA-47	Section 5.4.2			"The locations of these cores will be determined upon completion of the sediment bed probing study (see Section 5.4.1.1) and areas of cohesive bed sediments have been identified.". Does this indicate that non-cohesive bed sediments will not be included in the Sedflume study? Appendix A indicates that non-cohesive materials can be Sedflume tested.	Only cohesive bed sediments will be included in the Sedflume study. The text will be revised and the reference to testing of non-cohesive cores will be deleted.
EPA-48	Section 5.4.3			"(^{137}C)" needs 's' inserted after 'C' to represent cesium instead of carbon. Also, what if the anticipated cesium peak occurs within sub-sample interval that is not selected for analysis, e.g. 8 to 12 cm interval? What if true cesium peak has eroded away, leaving an apparent peak that does not correspond to assumed 1963 date of peak? How could analyst tell the difference between these two possible situations?	The text will be revised as requested. If needed, the archived sub-samples can be submitted for laboratory analysis and the additional data would be used to refine the age-dating analysis, as described at the end of Section 5.4.3. in addition, the analysis of the ^{137}Cs activity profile is not done in isolation. This analysis is done in conjunction with the analysis of the ^{210}Pb activity profile, as well as physical information for the core, resulting in several lines of evidence that are used to characterize deposition rates.
EPA-49	Section 5.4.3			"Sub-samples will be submitted for laboratory analysis of ^{137}C and ^{210}Pb activity from every eighth sub-sample interval, starting with the 0 to 4 cm interval.". Sounds like second selected sub-sample would be from 32 to 36 cm interval. Is that correct interpretation? Seems like peaks might fall within untested intervals. Also, need to add 's' after 'C' to indicate cesium instead of carbon.	The second sub-sample will be from the 32-36 cm interval. If needed, the archived sub-samples can be submitted for laboratory analysis and the additional data would be used to refine the age-dating analysis.
EPA-50	Section 5.5			Dioxin profiles in sediment may indicate an erratic "rate of temporal change," with increases and decreases in quick succession (as seen in profiles from nearby). Not clear how a synthetic average net rate of change would be used.	Temporal changes in dioxin concentrations will be used both qualitatively and quantitatively to evaluate the predictive capability of the chemical fate and transport model.
EPA-51	Section 2.1	Page 3		Site History states at the end of the first paragraph: "For the purposes of the modeling study, the Study Area is defined as the San Jacinto River from Lake Houston to the Houston Ship Channel (Figure 1)." It is highly probable that transport of chemicals of potential concern (COPCs) from the Site are beyond the intersection with the Houston Ship Channel, thus the Study Area should be extended farther downstream to the entrance of the Houston Ship Channel into Galveston Bay. We understand that other sources of COPCs are likely and thus monitoring and design of the study should take this into consideration while accurately assessing the extent of COPCs fate and transport downstream.	Currently, we believe that the spatial extent of the modeling domain is adequate for meeting the objectives of the study and answering the questions listed on p. 5 and 6. If the results of the modeling study indicate that the spatial extent of the modeling needs to be expanded, then it will be possible to do so in the future.
EPA-52	Section 2.1	Page 4		Site History makes reference in the final paragraph to "late successional stage estuarine riparian vegetation." During a Site visit, the Site seemed dominated by hackberry trees which are often considered pioneer or early successional stage trees in this portion of Texas. The basis for the characterization of the Site as having vegetation characteristic of a late successional stage should be validated to verify this description.	This sentence in Section 2.1 will revised as follows: "The impoundments are currently occupied by estuarine riparian vegetation to the west of the central berm …"
EPA-53	Section 3.1	Page 9		Description of Modeling Framework. Will any of the system of models account for movement in	The effects of boat movement on sediment transport will not be explicitly incorporated into the

				the water column and sediments due to boat turbulence?	modeling analysis. Water column measurements and predictions will implicitly include the collective effects of propeller wash, but this kind of model can't include the short term impact of propellers. Propeller wash models exist and are used to evaluate the potential scouring effects of vessels mostly for engineering design of alternatives during the feasibility study. The need for a propeller wash model may arise during the feasibility study but it cannot be determined at this stage.